JOURNAL

OF THE

WASHINGTON ACADEMY OF SCIENCES

VOL. 20 MARCH 4, 1930 No. 5

GEOPHYSICS.—*Note on a comparison of sunspot numbers, terrestrial magnetic activity, and long wave radio signal strength.*[1] L. W. AUSTIN, Bureau of Standards.

The figure shows a comparison of the monthly averages of sunspot numbers, terrestrial magnetic activity (horizontal range) measured at Cheltenham, Md., and the daytime ratio field strength of signals received in Washington from the trasmitting stations at Bordeaux, France (FYL) ($f = 15.9$ kc, $\lambda = 18900$ m,) and at Nauen, Germany (DFW) ($f = 23.4$ kc, $\lambda = 12800$ m).

The resemblance of the sunspot curve to the other three is not close, but the similarity in the changes in magnetic activity to those in daylight signal strength seems to be unmistakable. The resemblance of the Bordeaux signal curve to that of the magnetic activity seems closer even than the resemblance between the two signal curves. The deep drop of both the magnetic and signal values in November (more rarely in December) is especially striking. This early winter drop in signals has often been noticed, and in the case of transmission between Europe and America, has been sometimes ascribed to the proximity of the signal path to the area of Arctic darkness. It now appears that this and other seasonal variations both in magnetic activity and East-West long-wave signal strength may be due to common causes.

[1] Received January 22, 1930. Publication approved by the Director of the Bureau of Standards.

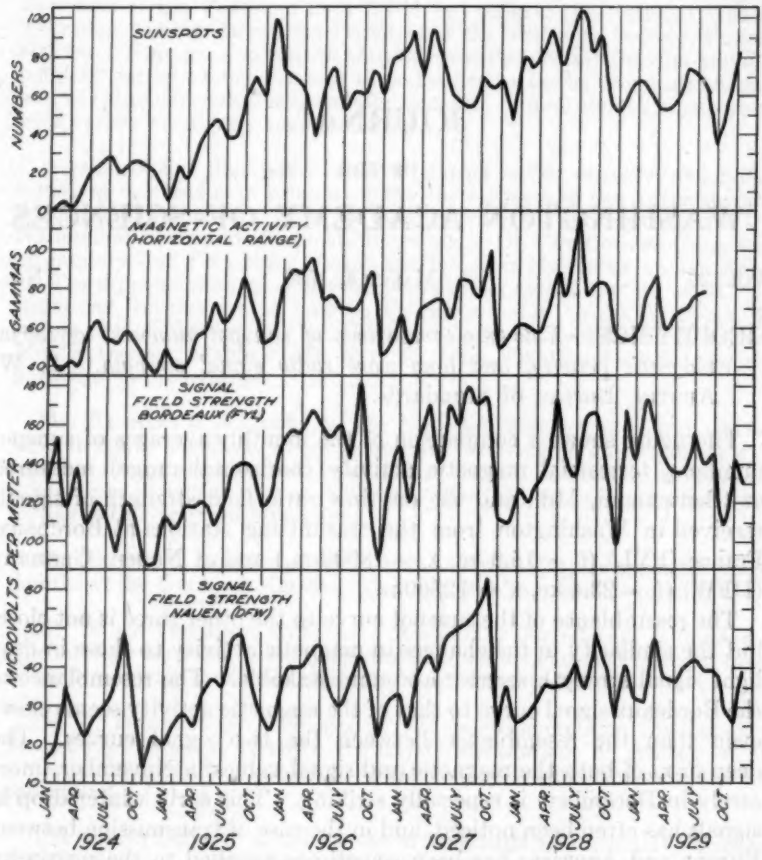

Fig. 1.—Curves of sunspot numbers, magnetic activity, and radio signal strength.

BOTANY.—*The identity of the South American fish poisons, "cube" and "timbó."*[1] E. P. KILLIP, U. S. National Museum, and A. C. SMITH, New York Botanical Garden.

Recent investigations by chemists and entomologists, members of the Department of Agriculture staff, and others have shown that the roots of a plant called "cube" contain a substance of value as an in-

[1] Published by permission of the Secretary of the Smithsonian Institution.

secticide.[2] The plant was brought to the attention of the Department of Agriculture through the suggestion of William J. Dennis, an American resident in Peru, who obtained a patent (U. S. No. 1,621,240) on its use. The roots first tested came from Huancayo, a city of the high cordillera of Peru; a second lot of roots was obtained later from Iquitos, in the low-lying Amazon region of northeastern Peru. The plant was said to be a shrub about five feet high. Little additional information was available.

On a trip of botanical exploration which we have just made into the interior of Peru and across Amazonian Brazil in the interest of the Smithsonian Intitution and the New York Botanical Garden we saw thousands of plants of "cube" in cultivation on plantations, and in a wild state in the dense forest occasional plants that appear to be nearly or quite identical. The name *cube*[3] was applied to it in the region about Huancayo and southward. Farther to the north in Peru the plant was referred to locally as "coñapi" or "pacai," the most commonly used names, however, being "barbasco legítimo" or simply "barbasco," which is the general name given to fish poisons in Spanish America. In Brazil the word "timbó" is used for fish poisons in general, the "barbasco legítimo" of Peru becoming "timbó legítimo." In British Guiana *cube* and other fish poisons are known as "haiari;" in French Guiana the word "nicou" is similarly employed.

We found that although several kinds of plants were used as fish poisons, such as *Cracca toxicaria*, *Cracca nitens*, and one or more species of *Clibadium*, and in Brazil, certain species of *Lonchocarpus*, one plant alone (*cube*) was most commonly cultivated and almost everywhere was said to be the most powerful. Curiously we never discovered this plant in flower or fruit, a circumstance giving rise to interesting speculation. Inasmuch as the roots are dug up at the end of the third or fourth year and we rarely saw individuals that were more than six or seven years old, it is possible that the plant flowers only with age. Or, cultivated for centuries as a fish poison, the present plants may represent a selected strain in which the content of the roots is at a maximum and the production of inflorescence at a minimum state.

From the vegetative characters it seems clear that the plant in question is *Lonchocarpus nicou* (Aubl.) DC., described[4] by Aublet in 1775 as *Robinia nicou* from a plant cultivated in French Guiana.

[2] See Dept. Agr. Bull. 1201: 6–7, 10–20, 34, 53, 54. 1924; Science 70: 478–479. Nov. 15, 1929.

[3] Pronounced coo'bay. Sometimes called *cubi* (coo'bee).

[4] Aubl. *Pl. Guian. Franc.* p. 771. *pl. 308.* 1775.

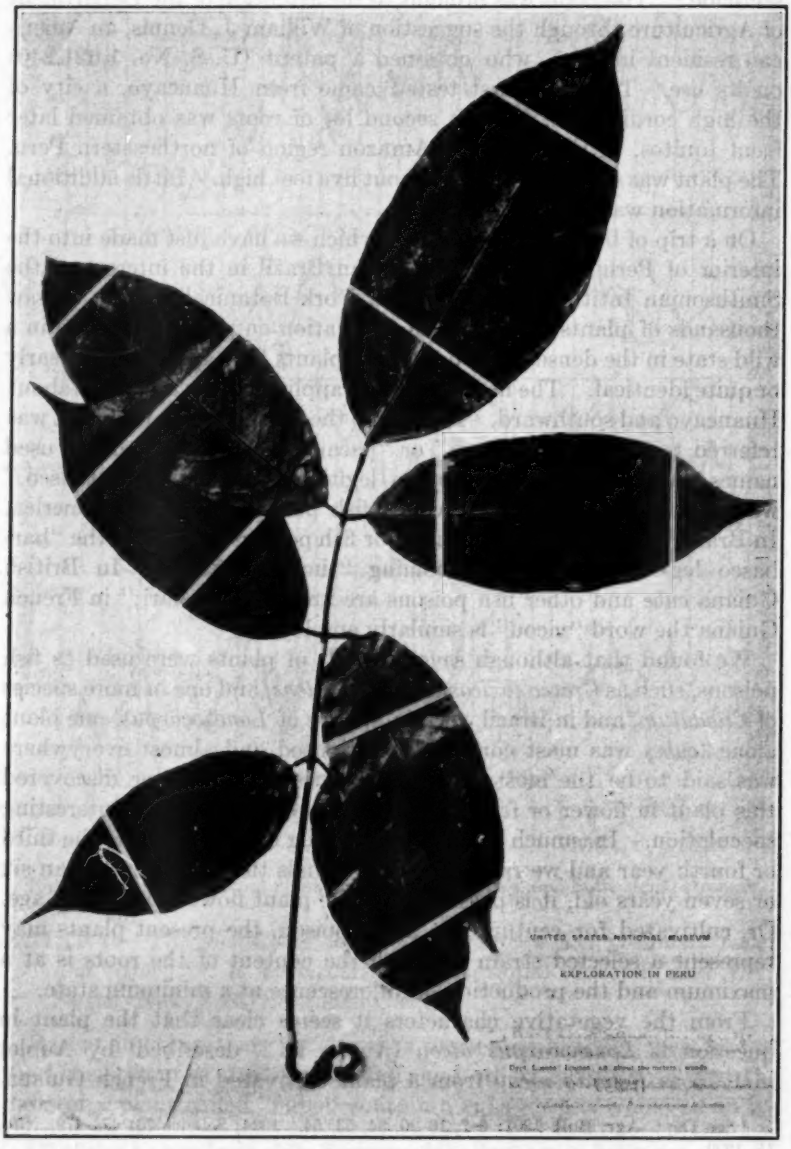

Fig. 1. *Lonchocarpus nicou* (½ natural size).

In shape and size the leaflets correspond almost exactly with those figured by Aublet; in both cases the tips are caudate-acuminate and the bases show variation from subacute to subrotund. Portions of our material were submitted to the British Museum (Natural History) for comparison with the type specimen of *Lonchocarpus nicou*, and the comparison has confirmed our identification. The striking appressed pubescence noted on the under surface of the leaflets in recent material is matched in the original. Aublet states, moreover, that his plant was used as a fish poison under the name "nicou."

From our field observations and from study of the herbarium material collected the species may be described thus:

LONCHOCARPUS NICOU (Aubl.) DC. Prodr. **2**: 261. 1825.

Robinia nicou Aubl. Pl. Guian. Franc. 771, *pl. 308*. 1775.

Shrub or small tree, up to 3 meters high,[5] with a main stem 4 to 8 cm. in diameter, with branches borne near summit, the trunk and the branches becoming scandent with age, the trunk sometimes climbing upon nearby shrubs or trees often to a height of 10 meters; leaves alternate, odd-pinnate, the base of rachis and petiolules thickened, the leaflets opposite (2 to 4, usually 3, pairs), oblong, occasionally lance-oblong or oblanceolate-oblong, 12 to 25 cm. long, 4 to 10 cm. wide (average size about 17 x 8 cm., extremes up to 35 cm. long, 17 cm. wide), caudate-acuminate at apex (tip averaging 2 cm. long), subacute to subrotund at base, entire, coriaceous or subcoriaceous, above dark green, sublustrous, and essentially glabrous, beneath paler, sometimes glaucescent, usually densely covered with straight appressed reddish- or golden-brown hairs,[6] pinnate-nerved, the midnerve sometimes impressed above, prominent beneath, the lateral nerves 7 to 10 to a side, ascending, arcuate toward margin, the venation closely reticulate.

Aublet describes the inflorescence as:

"Calix; perianthium monophyllum, turbinatum, quinquedentatum. Corolla papilionacea, purpurea, vexillo amplo, erecto. Pericarpium; legumen longum, acutum, gibbosum, glabrum, rufescens, uniloculare; bivalve. Semina tria aut quatuor, subrotunda, compressa, marginibus valvarum affixa."

The type specimen was collected in a clearing above the home of M. Budet, at Orapu, French Guiana.

Specimens examined:[7]

[5] Our notes show the following variation of the height with age:

Plants 1 year old, 0.75–1.3 meters; plants 2 years old, 1–1.3 meters; plants 4 years old but recently cut back, 1–1.7 meters; plants 2 years old, 1–1.7 meters; plants 2 to 3 years old, 2.5–3 meters; plants 3 years old, 3.7 meters; plant 2 years old, 2.2 meters high, the main stem bending toward a tree and climbing up its trunk to a height of about 8 meters.

[6] In the case of forest plants and those in overgrown abandoned plantations, the indument was invariably paler and less dense, owing presumably to the greater amount of shade.

[7] Unless otherwise stated the collections here cited are of cultivated plants collected by the writers.

PERU: Dept. Ayacucho: Kimpitiriki,[8] Río Apurimac, 400 meters, nos. 22913, 23053. Dept. Junín: Near La Merced, 1300 meters, no. 23878; Santa Rosa, on Pichis Trail, 650 meters, no. 26200; Puerto Yessup, 400 meters, no. 26369; Puerto Bermudez, 375 meters, nos. 26490, 26597, 26612; El Trionfo, on Río Pichis, 350 meters, no. 26692; Cahuapanas, on Río Pichis, 340 meters, no. 26712. Dept. Loreto: Puerto Leguia, 290 meters, no. 27504; Masisea, 275 meters, no. 26837; Iquitos, 100 meters, nos. 26886, 26893, 26895, 26945, 27096, 27135, 27159, 27278, 27362, 27369, 27380, 27487; Mishuyacu, near Iquitos, nos. 29917, 29957; Peña Blanca, on Río Itaya, near Iquitos, 110 meters, no. 29668; Yurimaguas, lower Río Huallaga, 135 meters, nos. 27565, 27566, 27994, 27997, 28211, 28812, 29061, 29066; Balsapuerto, 135–350 meters, nos. 28158, 28255, 28300, 28325 (wild), 28458, 28586 (wild), 28621 (wild); Lower Río Marañon, 150 meters nos. 29279, 29280; mouth of Río Santiago, *Tessmann* 4447 (in Berlin herbarium; fragment U. S. N. M.).

Fig. 2. Plants of *Lonchocarpus nicou*.

Fig. 3. *Lonchocarpus floribundus*.

BRAZIL: State of Amazonas: Manáos, 25 meters, no. 30026, 30038, 30137, 30177 (apparently wild). State of Pará: Gurupá, lower Rio Amazon, no. 30608 (apparently wild); Breves, Amazon Estuary, no. 30576; Pará, no. 30241. State of Matto Grosso: Santa Izabel, *F. Lima* (Herb. Mus. Goeldi 10863).

BRITISH GUIANA: Demerara, *Parker* (in Kew herbarium).

[8] At this locality alone the name "cube de almidón" was sometimes used, "almidón" meaning starch.

From this list it may be seen that we found the plant most extensively cultivated in the region about Iquitos (100 meters altitude). Many of the plantations contained several thousand trees. Yurimaguas, on the Huallaga River, a few miles above its mouth, is also a center of cultivation. Doubtless this is also the plant used by the natives of eastern Ecuador. Our stops in Brazil were few, but we found *Lonchocarpus nicou*, both in the forest and in cultivation, at Manáos and Gurupá, and in cultivation at Pará. In material recently lent us through the courtesy of the Director of the Royal Botanic Gardens, Kew, England, there is a specimen of a cultivated fish poison from Demerara, British Guiana, that clearly is *Lonchocarpus nicou*.

A more detailed account of South American fish poisons, including descriptions of the native method of use, is in preparation for future publication. At present it seems advisable to mention two other plants, the roots of which serve for poisoning fish.

Along the south bank of the Rio Negro above Manáos we found a large plantation of a second species of *Lonchocarpus*, *L. floribundus* (*Killip & Smith* 30041). This was a low shrub, 1 to 1.5 meters high, in fine flower and fruit. The roots were of a softer, more porous texture than those of *Lonchocarpus nicou*, but were said to be quite as effective as a fish poison. Samples of these are being analyzed.

At Gurupá, a settlement on the lower Amazon River at the mouth of the Rio Xingú, several plants of a third species of *Lonchocarpus* were obtained, the roots of which were reported as a fish poison even more effective than *Lonchocarpus nicou*, which also is grown in that vicinity. This exceptionally powerful plant had been identified[9] by Dr. Adolfo Ducke, the Director of the Museu Nacional of Rio de Janeiro as *Lonchocarpus nicou*. Although at the time of our visit, November, the plant was neither in flower nor in fruit, excellent flowering and fruiting material has generously been deposited in the U. S. National Herbarium by Dr. Ducke. Comparison of this with Aublet's description and illustration of *Lonchocarpus nicou* leads us to the conclusion that it represents a distinct species. In this Gurupá plant the leaflets have short tips, not over 1 cm. long, and the fruit is broadly ovate to oblong-ovate; whereas, as already noted, the leaflets of *Lonchocarpus nicou* are long-acuminate (tip 2 to 4 cm. long) and the fruit, as shown in Aublet's illustration, is linear-oblong.

The Gurupá plant may be known as:

[9] Archiv. Jard. Bot. Rio de Janeiro 4: 88, 89, 139. 1925.

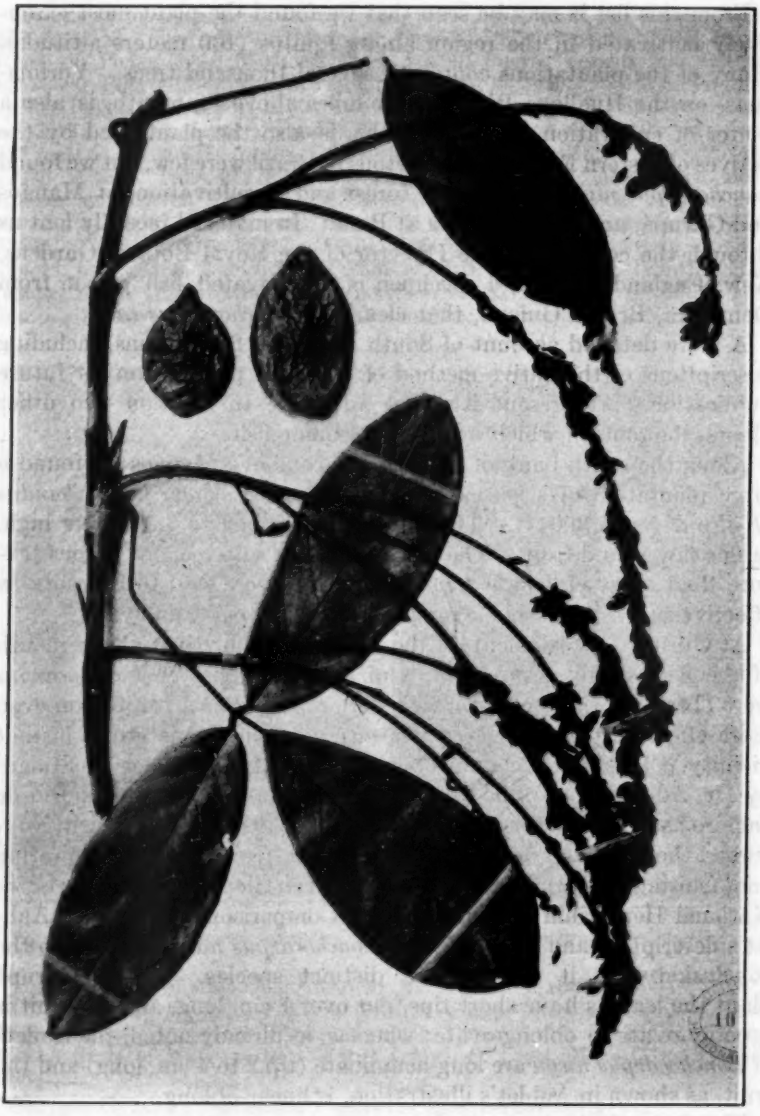

Fig. 4. *Lonchocarpus urucu* (type specimen, ¼ natural size).

Lonchocarpus urucu Killip & Smith, sp. nov.

Robust, much-branched shrub, the upper branches slightly scandent, the bark of the larger branches grayish, that of the smaller branches brown, lenticellate, and usually puberulous; leaves 5- to 9-foliolate, the rachis subterete, longitudinally striate, 12 to 25 cm. long (leaves of scandent portions much smaller), puberulous with dark brown or grayish, often gland-tipped hairs, the base (about 1 cm.) very fleshy; petiolules fleshy, sparingly puberulous; leaflets broadly ovate, obovate, or oblong, 10 to 17 cm. long, 5 to 8 cm. wide, abruptly short-acuminate at apex (tip 5 to 10 mm. long), rounded at base, pinnate-nerved (nerves prominent beneath and covered beneath with a dark brown or blackish indument, the midnerve impresed above, the secondary nerves 9 or 10 to a side, ascending, arcuate toward margin), thick-coriaceous, essentially glabrous and lustrous above, appressed-hirtellous with reddish-brown hairs beneath; racemes axillary, 3 or 4 borne near the ends of stout branchlets 8 to 18 cm. long, the rachis 10 to 20 cm. long, rufo-sericeo-tomentose; flowers in short-peduncled, closely approximate fascicles, the pedicels about 3 mm. long, densely rufo-sericeo-tomentose; bractlets orbicular-ovate, 0.7 to 1 mm. long, acute; calyx cylindric-campanulate, 4 to 5 mm. long, 2 to 2.5 mm. in diameter, densely rufo-sericeous, 5-toothed, the teeth triangular, 2 mm. long, 3 mm. wide at base, the two vexillar teeth connate into a broad lobe 5 mm. wide at base; petals reddish violet, pubescent without (especially distally), with short, appressed, pale hairs, the wings and carinal petals conspicuously ciliate at apex; standard suborbicular, bilobulate at apex, rounded at base to a narrow claw 3 mm. long, the blade about 10 mm. long, 12 mm. wide; wings obovate-oblique, rounded at apex, tapering at base to a narrow claw about 4 mm. long, the blade 9 mm. long, 5 mm. wide; carinal petals falcate, auriculate, obtuse, the claw 4 mm. long, the blade 9 mm. long, 5 mm. wide; staminal tube glabrous, slightly dilated at base, the filaments about 13 mm. long, free for the ultimate 3 mm.; ovary sessile, linear, minutely pale-puberulous, 4-ovuled; style about 7 mm. long, glabrous or slightly pubescent, arcuate; stigma capitellate, slightly broader than the slender tip of the style; legume broadly ovate to oblong-ovate, 4 to 9 cm. long, 2.5 to 3 cm. wide, rounded or subacute at apex, subacute or bluntly acuminate at base, strongly flattened, minutely hirtellous with subappressed hairs, 1- (rarely 2 or 3) seeded, the vexillar margin faintly ridged, the carinal margin rounded; seeds cochleate-reniform, about 2 cm. long, 2 cm. wide, dark brown.

TYPE in the U. S. National Herbarium, no. 1,040,936, from a plant cultivated at Gurupá, State of Pará, Brazil, September 29, 1916, *A. Ducke* (Museu Goeldi no. 16561, flowering specimen). Description of the fruit is based on a specimen collected by Dr. Ducke at the same locality in November, 1923 (Jardin Botanico Rio de Janeiro no. 11708; U. S. National Herbarium no. 1,442,506).

Represented also by *Killip & Smith* 30585, from the same locality. The name "timbó urucú" is given this plant by the natives because of the reddish indument of the inflorescence.

ZOOLOGY.—*A new raccoon from Lower California.*[1] E. W. NELSON and E. A. GOLDMAN, Biological Survey.

Study of the raccoons of Lower California has indicated differential characters for a hitherto unrecognized subspecies inhabiting the southern half of the peninsula. The new form may be described as follows:

Procyon lotor grinnelli,[2] **subsp. nov.**

Lower California Raccoon

Type.—From La Paz, Lower California, Mexico. No. 147181, ♂ adult, U. S. National Museum (Biological Survey collection), collected by Nelson and Goldman, February 15, 1906. Original number 19139.

General characters.—A large, pale subspecies with a rather broad, high, evenly arched skull. Similar to *Procyon lotor pallidus* but slightly darker and cranial characters, especially the more evenly arched profile of skull, distinctive. Compared with *Procyon lotor psora*, general color paler, more grayish, less deeply suffused with buff, the long black guard hairs over dorsum less in evidence; top of head grayer, less heavily mixed with black; black areas at posterior base of ears smaller; skull with frontal region more highly arched.

Color.—Type: Upper parts in general coarsely grizzled iron grayish, the median dorsal area faintly suffused with pale buff, becoming pronounced on back of neck, rather thinly overlaid with black; top of head gray, mixed with black, producing a grizzled effect; face with solid black mask and white markings usual in the group; under parts in general overlaid with very pale buffy grayish, the brown undertone showing through; throat patch blackish; ears grayish, with rather small black patches at posterior base; limbs about like under parts, but becoming whitish on feet; hind limbs with a small, pure brownish area on outer side near heel; tail with the usual annulations and black tip, the light rings pale cream buff and the narrower dark rings (six in this specimen, varying to seven in others) consisting of black-tipped hairs with an underlying buffy suffusion; dark rings less evident on under side of tail and scarcely complete, tending to fade out on median line, except two near tip.

Skull.—Similar to that of *P. l. pallidus*, but braincase and interorbital region broader; frontals rising higher anteriorly, the upper outline a more evenly convex curve (anterior frontal outline descending in a more nearly straight line from apex immediately behind postorbital processes in *pallidus*); dentition about the same. Compared with that of *P. l. psora* the skull is less flattened, the frontal region more highly arched; braincase rather broad and other cranial details much as in *psora*.

Measurements.—Type: Total length, 913 mm; tail vertebrae, 335; hind foot, 132. *Skull* (type): Greatest length, 122.1; condylobasal length, 115.5; zygomatic breadth, 77.9; interorbital breadth, 24.3; least width of palatal shelf (between last molars and interpterygoid fossa), 16.7; upper canine-molariform toothrow (alveolar length), 44.1.

[1] Received January 27, 1930.

[2] Named for Dr. JOSEPH GRINNELL, Director of the Museum of Vertebrate Zoology, University of California, in recognition of his extensive contributions to the knowledge of the fauna of Lower California.

Remarks.—Two subspecies of raccoons enter northern Lower California. These are *Procyon lotor pallidus* Merriam, of the Colorado desert in the northeastern part of the peninsula, and the animal described by Mearns as *Procyon lotor californicus* from the ocean beach near the last Mexican boundary monument, San Diego County, in the southwestern corner of California. The latter inhabits the comparatively humid northwest coast region of Lower California south to San Quentin. Some specimens from near the type locality of *californicus* suggest gradation toward *pallidus*, but general comparisons indicate that *californicus* can not satisfactorily be separated from *P. l. psora* Gray, from Sacramento, California.

Raccoons are dependent upon water for existence, and owing to exceedingly arid conditions in the central section of Lower California their general range is interrupted for considerable distances. The form here described, occupying the southern half of the peninsula differs rather markedly in combination of characters from both of the more northern subspecies. It requires no very close comparison with *P. l. mexicanus* of the adjacent mainland of Mexico, which in general, is paler, with the black postauricular spots obsolescent, and skull notably depressed in frontal region.

Specimens examined.—Eight, all from Lower California, as follows: La Paz (type locality), 2; Mount Miraflores, 1; San Ignacio, 5.

ZOOLOGY.—*A new murine opossum from Argentina.*[1] H. HAROLD SHAMEL, U. S. National Museum. (Communicated by JOHN B. REESIDE, JR.)

In 1920, Dr. A. Wetmore visited southern South America in the interests of the United States Biological Survey to make a study of the present status of northern migratory birds, particularly shore birds, which winter in the southern portion of the southern hemisphere. While engaged in this work he incidentally made a collection of 120 mammals, which is now in the U. S. National Museum. In this collection I have found a small opposum new to science.

Marmosa muscula sp. nov.

Type.—Adult male skin and skull, No. 236330 U. S. National Museum, collected by Dr. A. Wetmore in Formosa, Kilometro 182 (Central Formosa), Argentina, August 9, 1920.

Diagnosis.—A very small member of the genus, the smallest so far known, distinguished by its mouse-like coloration and its comparatively short tail.

Color.—This little animal is brownish in general tone of color. The hairs everywhere dark slate for the greater part of their length, this area followed by a subapical ring of colonial buff (Ridgway 1912). On the back the ends of the hairs are tipped with mars brown (Ridgway 1912), which gives to the

[1] Received January 28, 1930.

back a mixed buff and brown appearance, neither element strongly predominating. On the sides the buff is nearly clear and the dark tips are few and inconspicuous. Underparts clear colonial buff, the dark bases of the hairs showing through inconspicuously. There is a dark-brown eye ring, also a dark streak from the corner of the eye to the nose. Cheeks, sides of head, and shoulders are reddish brown, which changes into buff on the sides of the body. The tail is dark brown above, much paler below.

Skull.—In the skull the sides of the frontals are expanded, but unridged; in the interorbital region this swelling extends well down into the orbit; nasals pointed at juncture with the frontals, a portion of frontal coming down wedge fashion between them; the premolars are spaced closely together, all touching, the second (pm^2) being longer than the first or third.

Measurements.—Type: Total length, 123; tail, 55; foot, 11; ear (moistened) from crown, 9; total length of skull, 21.5; condylobasal length, 19.6; zygomatic width, 11.5; interorbital width, 3.5; length of nasals, 8.5; width of braincase, 8.5; maxillary tooth row (including incisor), 8.2; mandibular tooth row, 8.5; height of mandible, 6.5.

Remarks.—Marmosa muscula is next smaller than *M. bruchi* in general size, but the pale color and much longer tail (89.0 mm) of the latter will readily separate them. It is very mouse-like in appearance and even smaller than some specimens of *Mus muscula* in this collection from Buenos Aires, thus representing one of the smallest marsupials known. This specimen was examined by Oldfield Thomas of the British Museum of Natural History who said, "The Marmosa is a very distinct little species, quite unlike anything I have seen * * * *M. bruchi* has a white belly and the body marking of the *M. marmota* group."

PROCEEDINGS OF THE ACADEMY AND AFFILIATED SOCIETIES

THE BIOLOGICAL SOCIETY

737TH MEETING

The 737th meeting was held at the Cosmos Club October 19, 1929, with President WETMORE in the chair and 55 persons present.

The President announced the membership of the standing committees of the Society as follows: *Committee on Communications:* W. B. BELL, *Chairman*, V. BAILEY, W. H. WHITE, LEWIS RADCLIFFE, W. R. MAXON, W. L. SCHMITT; *Committee on Zoological Nomenclature:* G. S. MILLER, JR., Chairman, A. C. BAKER, PAUL BARTSCH, E. A. CHAPIN, H. C. OBERHOLSER; *Committee on Publications:* CHAS. W. RICHMOND, Chairman, J. H. RILEY, F. C. LINCOLN, W. H. WHITE.

A. WETMORE announced that the Pinchot expedition to the South Seas, although its collections have been received only in part as yet, has already sent a dozen forms of birds new to the National Museum.

Program: J. M. ALDRICH: *Notes on the life zones of northern Europe* (illustrated).—The speaker collected flies at Aare, Sweden, last July, and while there ascended the mountain called Aareskutan, just back of the hamlet. The railroad station beside the river has an altitude of about 1500 feet, while the summit of the mountain reaches about 5000 feet. The first 500

feet of ascent is in spruce forests, corresponding to the Canadian Zone in North America. The spruces end abruptly and are succeeded by a narrower zone of birches, perhaps 300 feet in vertical width; these begin with a few large, scattered, old trees, changing into smaller and more crowded growth, then into dwarfed forms. All tree growth ends within 1000 feet elevation above the river. The birch zone is thought to represent the Hudsonian of North America; the rest of the mountain above is Arctic. (*Author's abstract.*)

HERBERT FRIEDMANN: *Parasitism in birds* (illustrated).—Parasitic breeding habits are found in five groups of birds—the cowbirds, cuckoos, honeyguides, weaver-birds, and ducks. The habit must have arisen independently in each, and the causative factors were probably different in the different groups. The cowbirds are the only group in which all the species have been studied and the evidence put together into a coherent story.

The most primitive cowbird, the bay-winged cowbird of Argentina, is not parasitic but uses other birds' nests in preference to building for itself. The others are all parasitic. The results of a careful survey of the habits of all of them show that the immediate case of the parasitic habit was the loss of the territorial protecting instincts of the male, leaving the female in a condition where it lays eggs in nests which it has not built, and with no great desire to protect them once they are laid. (*Author's abstract.*)

738TH MEETING

The 738th meeting was held at the Cosmos Club November 2, 1929, with President WETMORE in the chair and 100 persons present.

S. F. BLAKE reported that a freshly dead specimen of Solitary Vireo was found in Clarendon, Virginia, by H. A. ALLARD on November 1, 1929.

I. HOFFMAN stated that C. F. DENLY, who has a pheasantry near Washington, had succeeded during the past summer in raising three Elliott Pheasants, the first to be grown in this country. He also raised about 16 other species of pheasant.

Program: A. H. HOWELL: *Recent notes on birds and mammals of the Everglades* (illustrated).—The speaker described the bird and mammal fauna of the southern tip of the Florida peninsula, illustrating his talk with specimens and slides. He prefaced his remarks by a description of the topography and plant life of the region, showing that the flora of the hammocks along the southeast and southwest coasts and in the Cape Sable region is composed mainly of tropical trees and shrubs of West Indian origin. The insect and land snail faunas are likewise considered by those who have studied them to have been derived in large part from the West Indies. Only about 6 species of birds of this region, however, are of tropical origin, these being confined mainly to the Florida Keys and to the mangrove forests on the coast of the mainland. There are no terrestrial mammals of tropical affinities found in Florida, the only tropical species being the manatee. A number of specimens of the rarer birds of the region were exhibited and suggestions made regarding the need for more rigid protection of certain disappearing species. (*Author's abstract.*)

E. F. COE, Chairman Tropic Everglades Park Association: *America's own tropics* (illustrated).—The speaker, after referring to the rapid destruction of wild habitats by man, made an eloquent plea for the preservation of about 2500 square miles of the Cape Sable region of southern Florida, which is still in a practically unspoiled condition and which represents practically the only tropical habitat in the United States. The talk was illustrated by numerous colored slides showing scenery and plant and animal life.

739TH MEETING

The 739th meeting was held November 19, 1929, with Vice-President JACKSON in the chair and 35 persons present. New members elected: CLARENCE COTTAM, BENJAMIN MILLER.

S. F. BLAKE reported the observation on October 20, of what seemed to be a contest between two female English sparrows for possession of a birdbox. The birds fought vigorously inside the box, while a male sparrow perched nearby without taking part in the quarrel.

Program: L. V. COLEMAN, American Association of Museums: *Museums in South America.*—The speaker described his recent trip to South America for the purpose of visiting the principal museums there. Besides mentioning the museums visited, he gave many interesting side lights on the countries and people visited.

C. W. STILES: *Proposals Submitted as Amendments to International Rules of Zoological Nomenclature.*—The speaker presented a paper summarizing the propositions which have been submitted to the International Commission on Zoological Nomenclature as amendments to the International Rules. With each proposition, he discussed the theoretical background. A brief summary of the proposed amendments will appear in Entomological News, December, 1929.

S. F. BLAKE, *Recording Secretary.*

740TH MEETING

The 740th meeting was held at the Cosmos Club November 30, 1929, with President WETMORE in the chair and 44 persons present. New member elected: J. W. BULGER.

FRANK THONE called attention to several recent biological publications.

A. WETMORE commented on birds new to the National Museum collections received from the Pinchot South Sea Expedition.

PAUL B. JOHNSON gave a brief review of the life and work of the Rev. FRANCIS TONDORF of Georgetown University, a distinguished seismologist and biologist.

VERNON BAILEY called attention to the fact that the natural food supply of squirrels is scanty this year and urged that steps be taken to provide food for them. E. P. WALKER suggested a series of letters to newspapers to keep this need before the public.

P. B. JOHNSON reported seeing a black squirrel captured by a red-tailed hawk in the Zoological Park.

A. WETMORE reported the capture of sharp-tailed sparrows at Ocean City, Maryland, last year, as well as the recent capture of two more specimens, one at Ocean City, the other at Cornfield Harbor, Maryland.

Program: E. R. KALMBACH: *Notes on waterfowl sickness in 1929 (illustrated).*—In 1914, 1915, and 1916, Dr. ALEXANDER WETMORE made a study of the malady that had killed many thousands of ducks at Great Salt Lake, Utah. Certain soluble salts in the "alkali," prevalent in the shallow waters and on the mud flats of that area, were found to be the causative agents.

Since that time "duck sickness" has been noted in many other areas, some of which are quite different in character from the Great Salt Lake region. Although alkali in some form is almost always present at the scene of such outbreaks, its chemical composition varies greatly, and in some instances, "duck sickness" has occurred in areas in which the salts found to be the cause at Great Salt Lake are comparatively rare.

A study of this "disease" was resumed during the past season in the general vicinity of Klamath Falls, Oregon, where a number of bodies of water furnished varied environments in which the sickness occurred. In discussing this work the speaker pointed out some of the unsolved aspects of the trouble, the progress that had been made, and explained that the study would be continued next season. (*Author's abstract.*)

REMINGTON KELLOGG: *The migration of whales* (*illustrated*).—See Smithsonian Annual Report 1928: 467. 1929.

W. B. BELL, *Recording Secretary pro tem.*

741ST MEETING

741st meeting was held at the Cosmos Club December 14, 1929, with President WETMORE in the chair and 120 persons present. New members elected: HERBERT FRIEDMANN, F. A. WARREN.

President Wetmore was nominated to represent the Biological Society on the council of the Washington Academy of Sciences.

C. W. STILES discussed the nomenclature of the South American fox-tailed wolves.

Program: O. J. MURIE: *Elk studies in the Jackson Hole region* (*illustrated*). The elk is largely a grazing animal but also utilizes browse to a considerable extent. In some of the so-called waste-land on the winter range are found certain shrubby plants which are very palatable for elk and help to augment the winter food supply. One of the most important phases of the study is the question of disease. Squirreltail grass in the hay and perhaps other rough feed produce abrasions in the mouth of the elk, resulting in an infection with necrotic stomatitis. This causes an annual loss of elk which can perhaps be remedied by suppression of squirreltail hay and scattering the herds. Conditions on the summer range are very favorable for the elk. (*Author's abstract.*)

The speaker also showed motion pictures of elk, moose, and other wild animals of Jackson Hole region.

Discussed by V. BAILEY, who stated that he considered the "fluting" of the elk to be a sort of song; by M. C. HALL who considered that ticks and scabies are probably of real importance under wild conditions, but that internal parasites are scarcely so; also by L. O. HOWARD, C. W. STILES, W. B. BELL, and E. A. GOLDMAN.

MAURICE C. HALL: *Parasites of elk and other wild ruminants.*—The parasites of wild ruminants are of interest in connection with their actual or potential transfer from these ruminants to domesticated livestock, especially sheep, goats and cattle, and as forms which have transferred from domesticated livestock to wild ruminants. The evidence available points definitely to certain parasitic species as having made these transfers. Thus the common sheep stomach worm, *Haemonchus contortus*, has been found in at least 10 species of wild ruminants in North America, whereas such species as *Ostertagia bullosa*, first found in sheep and later in the pronghorn antelope, and *Cooperia bisonis*, first found in the bison and later in domesticated cattle, are evidently normal parasites of wild ruminants transferring to domesticated ruminants. The common sheep liver fluke, *Fasciola hepatica*, has been found occasionally in wild ruminants, while the large liver fluke, *Fasciola magna*, normally a parasite of American deer, has become a rather common parasite of cattle in some areas. The fringed tapeworm, *Thysanosoma actinioides*, is evidently a normal parasite of American wild ruminants which has become accustomed to sheep as hosts.

Another feature of interest is the fact that parasites in unusual hosts may behave differently from the way they behave in their usual hosts. Thus *Fasciola magna* forms large cysts in the liver of cattle, apparently with no communication to the exterior whereby the eggs could leave the host and continue the life cycle; little is known about this parasite in its deer hosts, but the present assumption is that it occurs in the bile ducts and thus is able to complete its life cycle in the usual way. The fringed tapeworm has been reported regularly from the small intestine of deer hosts, except in one instance where the writer found it in the fourth stomach of an elk, the worm being coiled in a ball with the head at the center, but in sheep the worm is frequently present in the bile ducts.

The question as to what can be done to control parasites in wild ruminants presents several rather interesting and difficult problems. It is probable that these problems will increase in importance as wild animals are confined in smaller areas with a resultant concentration of parasitic infection. (*Author's abstract.*)

S. F. BLAKE, *Recording Secretary.*

SCIENTIFIC NOTES AND NEWS

Dr. LOUIS A. BAUER, Director of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington since the establishment of the Department on April 1, 1904, retired from this position on January 1, 1930, with the title of Director Emeritus. Provision is also made whereby if his health permit he may carry on studies during the coming year as a Research Associate of the Institution. Mr. JOHN A. FLEMING, associated with Dr. BAUER as chief assistant in the Department of Terrestrial Magnetism since 1904, as Assistant Director for observational and administrative work during 1922 and 1923, and as Assistant Director in charge of operations since 1924, continues in charge of the work of the Department with the title of Acting Director.

Obituary

DR. WILLIAM ALLEN ORTON, Director and General Manager of the Tropical Plant Research Foundation, and a member of the ACADEMY, died on January 7, 1930. He was born at North Fairfax, Vermont, February 28th, 1877, and studied at the University of that state, receiving the degrees of B.S. in 1897 and M.S., in 1898; and in 1915, the honorary degree of Sc.D. After spending two years as Assistant Botanist at the Vermont Agricultural Experiment Station, he was appointed as Plant Pathologist in the Bureau of Plant Industry, U. S. Department of Agriculture, where he remained until 1924, holding important positions including that of vice-chairman of the Federal Horticultural Board for 12 years. In 1924 he resigned from the government service to take up the position he held until the time of his death. For some years he was also Chairman of the Committee on Tropical Research of the National Research Council. He was a member or fellow of numerous scientific societies, serving as President of the Phytopathological Society in 1927. Besides being an eminent authority on plant diseases and quarantines, he made a study of diets adapted to use in diabetes, a disease from which he suffered for many years, and which finally led to his death in his 53rd year.